

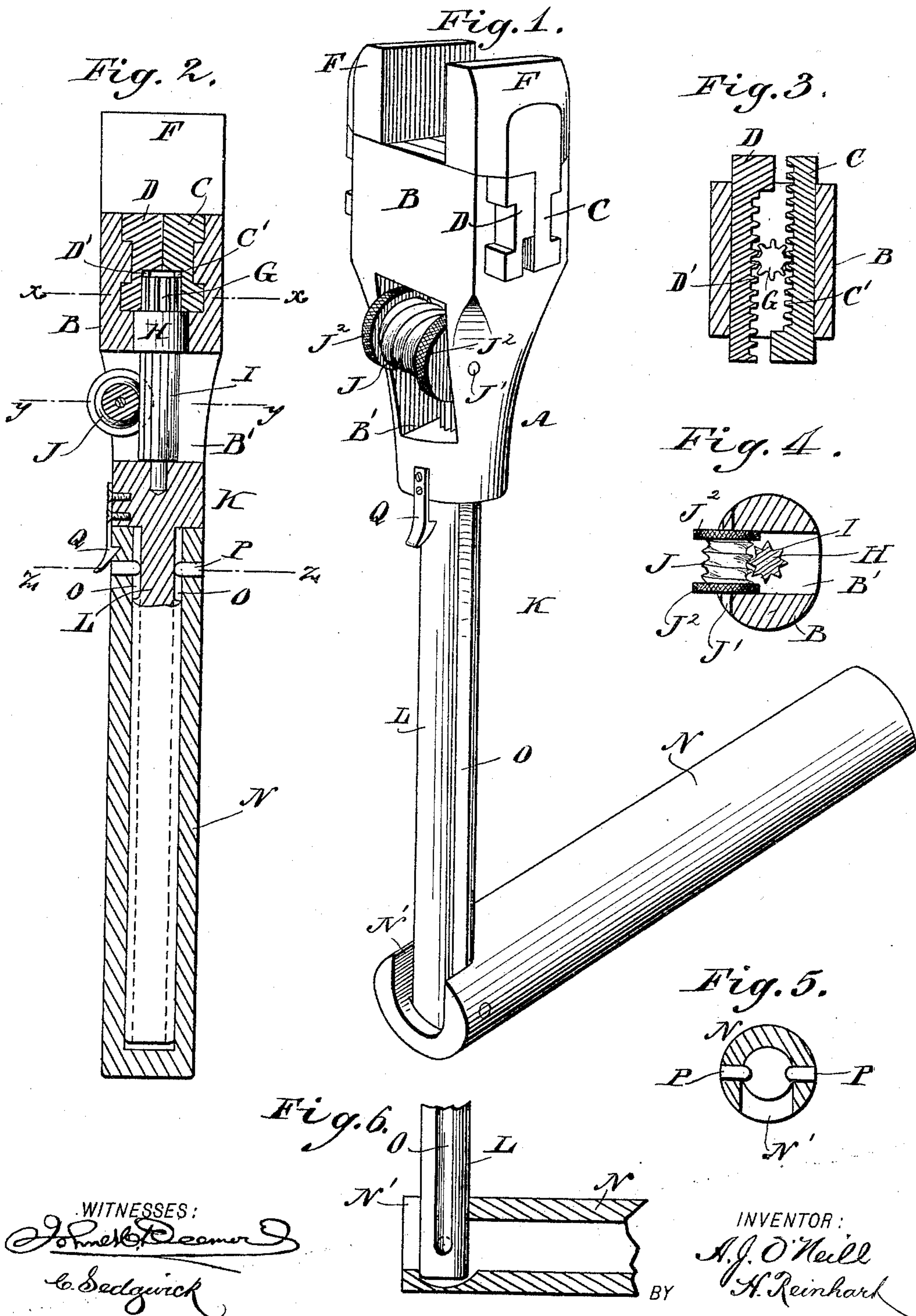
(No Model.)

A. J. O'NEILL & H. REINHART.

WRENCH.

No. 440,435.

Patented Nov. 11, 1890.



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UNITED STATES PATENT OFFICE.

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WRENCH.

SPECIFICATION forming part of Letters Patent No. 440,435, dated November 11, 1890.

Application filed May 28, 1890. Serial No. 353,443. (No model.)

To all whom it may concern:

Be it known that we, AUGUSTUS J. O'NEILL and HENRY REINHART, of Butte City, in the county of Silver Bow and State of Montana, have invented a new and Improved Wrench, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved wrench which is simple and durable in construction, very effective when used, and readily adjustable for universal use.

The invention consists of jaws fitted to slide toward or from each other and provided with racks, a gear-wheel meshing into the said racks, and means for turning the said gear-wheel in either direction to open or close the jaws.

The invention also consists in certain parts and details and combinations of the same, as will be described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the improvement. Fig. 2 is a longitudinal section of the same. Fig. 3 is a sectional plan view of the same on the line *x x* of Fig. 2. Fig. 4 is a like view of the same on the line *y y* of Fig. 2. Fig. 5 is a similar view of the same on the line *z z* of Fig. 2, and Fig. 6 is a sectional side elevation of the handle-joint.

The improved wrench A is provided with a head B, in the upper end of which are fitted to slide longitudinally in suitable guide-ways the arms C and D, formed on the jaws E and F, extending above the head D and adapted to slide toward and from each other to grasp or release the object to be operated on by the wrench.

On the opposite faces of the arms C and D are formed racks C' and D', respectively, meshing into a gear-wheel G, located between the two racks and secured on a shaft H, arranged vertically and mounted to turn in suitable bearings in the head B. On part of the shaft H are formed vertically-arranged worm-teeth I, extending into an opening B' of the head B and adapted to be engaged by a longitudinally-arranged worm-wheel J,

mounted to turn loosely on a pin J', fastened in the head B. The worm-wheel J is provided on each side with milled heads J² for conveniently turning the said worm-wheel to turn the worm-shaft H, so as to rotate the gear-wheel G, which in meshing in the two racks C' and D' causes the arms C and D, and consequently the jaws E and F, to slide toward or from each other, according to the direction in which the milled heads of the worm-wheel J are turned. The handle K of the wrench A is preferably made in two parts L and N, of which the part L is rigidly secured on the head B, and is provided with two grooves O, engaged by the inner ends of pins P, fastened near one end of the cylindrical handle part N. When the latter is placed over the part L, as shown in Fig. 2, then a spring-latch Q holds the cylindrical part N in place and to the head B.

When it is desired to use the handle part N as a lever to turn the wrench, then the catch Q is disengaged from the part N, and the latter is moved outward, so that the pins P slide to the ends of the grooves O, and then the part N is swung into a right-angular position, the pins B being the fulcrum, and part of the cylindrical part N being cut out, as at N', to permit such movement. When the jaws E and F have been moved into engagement with the object to be grasped, then the wrench can be conveniently turned by the operator taking hold of the cylindrical part N and moving the same around.

It will be seen that this wrench can be readily applied for all purposes for which wrenches are now ordinarily used; but it can also be used to great advantage in places where working room is limited and in which ordinary wrenches cannot be used.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a wrench, the combination, with jaws fitted to slide toward or from each other and each provided with a rack, of a gear-wheel meshing into the said racks and means, substantially as described, for conveniently turning the said gear-wheel in either direction to open or close the jaws, substantially as shown and described.

2. In a wrench, the combination, with a

head provided with guideways, of jaws fitted to slide in the guideways of the said head and each provided with a rack, a gear-wheel meshing into the said racks, a worm-shaft 5 carrying the said gear-wheel and mounted to turn in the said head, and a worm-wheel meshing into the said worm-shaft and adapted to be turned by the operator, substantially as shown and described.

10 3. In a wrench, the combination, with a head provided with guideways and a transverse opening, of jaws fitted to slide in the said guideways and each provided with a rack, a gear-wheel meshing into the said racks, 15 a worm-shaft carrying the said worm-wheel, mounted to turn in the said head, the worm part of the shaft extending in the said opening, a worm-wheel mounted to turn in the said opening and in mesh with the said worm-shaft, and milled heads held on the said 20 worm-wheel for conveniently turning the latter, substantially as shown and described.

4. A wrench comprising a head, a longitudinally-grooved handle or shank, the 25 grooves of which are closed at their lower ends, and a tubular auxiliary shank or handle

portion N sliding upon said handle or shank, provided with pins engaging the said grooves, and having a notch N' in the inner end between the two pins to permit the handle portion N to be swung at right angles upon the lower end of the handle or shank, substantially as described. 30

5. A wrench comprising a head having a catch Q, a longitudinally-grooved handle or 35 shank, the grooves of which are closed at their lower ends, and a tubular auxiliary shank or handle portion sliding upon said handle or shank, provided with pins engaging the said grooves, a notch N' in its inner 40 end between the two pins to permit the handle portion N to be swung at right angles upon the lower end of the handle or shank, and a recess on the outer side of its notched end to engage the catch Q, substantially as 45 described.

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